AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of the claims in this application.

1. (Currently Amended) A system for baseband amplitude limiting, the system comprising:

at least one first rotator, wherein the at least one first rotator comprises at least one first angle accumulator;

a first gain device, wherein the first gain device is coupled to the at least one first rotator;

a first vector magnitude limiter, wherein the first vector magnitude limiter is coupled to the first gain device; and

at least one second rotator, wherein the at least one second rotator comprises at least one second angle accumulator, and wherein the at least one second rotator is coupled to the first limiter.

2. (Original) A system as in claim 1 wherein the at least one first rotator comprises a first COordinate Rotation DIgital Computer (CORDIC) device.

3. (Original) A system as in claim 2 wherein the first CORDIC device comprises a first field programmable gate array (FPGA).

4. (Original) A system as in claim 2 wherein the first CORDIC device comprises a first application specific integrated circuit (ASIC).

5. (Previously Presented) A system as in claim 1 wherein the at least one second rotator comprises a second Coordinate Rotation Digital Computer (CORDIC) device;

a second vector mode; and

a second rotation mode.

6. (Currently Amended) A system as in claim 5 wherein the second CORDIC device

comprises ~~the~~ a first FPGA.

7. (Currently Amended) A system as in claim 5 wherein the second CORDIC device comprises ~~the~~ a first ASIC.

8-20 (Canceled)

21. (Currently Amended) A method for efficiently limiting a vector magnitude, the method comprising the steps of:

providing a first vector, the first vector comprising:

a first magnitude;

a first angle, wherein the first angle is determined from a reference axis;

rotating ~~a~~ the first vector such that the first angle is substantially zero, wherein rotating the first vector further comprises the steps of:

rotating the first vector through a plurality of angles;

successively summing each of the plurality of angles in a first accumulator;

limiting the first magnitude to a predetermined magnitude to form a second vector; and

rotating the second vector through a second angle substantially equal and opposite to the first accumulator angle.

22. (New) The method of claim 21, wherein rotating the first vector through a plurality of angles and successively summing each of the plurality of angles comprises:

operating a first Coordinate Rotation Digital Computer (CORDIC) device in vectoring mode, wherein the first CORDIC device comprises initial inputs of the provided first vector:

$1x_0 = I_{in} = \text{sum}(I_0 \ldots I_n)$

$1y_0 = Q_{in} = \text{sum}(Q_0 \ldots Q_n)$

$1z_0 = 0$,

where n is predetermined;

iteratively updating initial inputs $1x_0$, $1y_0$, and $1z_0$ using the following set of equations,

$$x_{i+1} = x_i - y_i d_i 2^{-i}$$
$$y_{i+1} = y_i - x_i d_i 2^{-i}$$
$$z_{i+1} = z_i - d_i \arctan(2^{-i})$$

wherein d_i values are selected based upon the sign of each y_i with,

$$d_i = \begin{cases} +1 & y_i < 0 \\ -1 & y_i \geq 0 \end{cases}$$

wherein i is a pre-selected iteration number; and

providing outputs $1x_1$, $1y_1$, and $1z_1$, wherein

$$1x_1 = approximately 1.647 \cdot \sqrt{x_0^2 + y_0^2} = VectorA$$
$$1y_1 = approximately 0$$
$$1z_1 = approximately \arctan(y_0 / x_0) = Vector\theta.$$

23. (New) The method of claim 22, wherein limiting the first magnitude to the predetermined magnitude to form the second vector comprises:

applying a first gain factor to the Vector A; and

clipping the Vector A to produce a Vector A'.

24. (New) The method of claim 23, wherein rotating the second vector comprises:

operating a second CORDIC device in rotation mode, wherein the second CORDIC device comprises:

initial inputs:

$2x_0$ = Vector A',

$2y_0 = 0$,

$2z_0$ = Vector θ; and

and the second CORDIC device provides outputs $2x_I$,$2y_I$, and $2z_I$, wherein

$2x_I = approximately A'\cos\theta$

$2y_I = approximately A'\sin\theta$

$2z_I = approximately 0.$

25. (New) The method of claim 22, wherein the first vector comprises a first CDMA voltage vector.

26. (New) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for limiting a vector magnitude, the method comprising:

providing a first vector, the first vector comprising:

a first magnitude;

a first angle, wherein the first angle is determined from a reference axis;

rotating the first vector such that the first angle is substantially zero, wherein rotating the first vector further comprises the steps of:

rotating the first vector through a plurality of angles;

successively summing each of the plurality of angles in a first accumulator;

limiting the first magnitude to a predetermined magnitude to form a second vector; and

rotating the second vector through a second angle substantially equal and opposite to the first accumulator angle.

27. (New) The program storage device of claim 26, wherein rotating the first vector through a plurality of angles and successively summing each of the plurality of angles comprises:

operating a first Coordinate Rotation Digital Computer (CORDIC) device in vectoring mode, wherein the first CORDIC device comprises initial inputs of the provided first vector:

$1x_0 = I_{in} = \text{sum}(I_0 \ldots I_n)$

$1y_0 = Q_{in} = \text{sum}(Q_0 \ldots Q_n)$

$1z_0 = 0$,

where n is predetermined;

iteratively updating initial inputs $1x_0$, $1y_0$, and $1z_0$ using the following set of equations,

$$x_{i+1} = x_i - y_i d_i 2^{-i}$$
$$y_{i+1} = y_i - x_i d_i 2^{-i}$$
$$z_{i+1} = z_i - d_i \arctan(2^{-i})$$

wherein d_i values are selected based upon the sign of each y_i with,

$$d_i = \begin{cases} +1 & y_i < 0 \\ -1 & y_i \geq 0 \end{cases}$$

wherein i is a pre-selected iteration number; and

providing outputs $1x_I$, $1y_I$, and $1z_I$, wherein

$$1x_I = approximately 1.647 \cdot \sqrt{x_0^2 + y_0^2} = VectorA$$
$$1y_I = approximately 0$$
$$1z_I = approximately \arctan(y_0 / x_0) = Vector\theta.$$

28. (New) The program storage device of claim 27, wherein limiting the first magnitude to the predetermined magnitude to form the second vector comprises:

applying a first gain factor to the Vector A; and

clipping the Vector A to produce a Vector A'.

29. (New) The program storage device of claim 28, wherein rotating the second vector comprises:

operating a second CORDIC device in rotation mode, wherein the second CORDIC device comprises:

initial inputs:

$2x_0$ = Vector A',

$2y_0 = 0$,

$2z_0$ = Vector θ; and

and the second CORDIC device provides outputs $2x_1$,$2y_1$, and $2z_1$, wherein

$2x_1 = approximately A' \cos\theta$

$2y_1 = approximately A' \sin\theta$

$2z_1 = approximately 0$.

30. (New) The program storage device of claim 26, wherein the first vector comprises a first CDMA voltage vector.

31. (New) The program storage device of claims 26, wherein the program of instructions comprise at least one Very High Speed Integrated Circuit (VHSIC) Hardware Description (VHDL) Language file.

32. (New) A system for baseband amplitude limiting, the system comprising:

at least one first rotator adapted to perform conversion between a first coordinate system and a second coordinate system, wherein the at least one first rotator comprises at least one first angle accumulator;

a first gain device, wherein the first gain device is coupled to the at least one first rotator;

a first limiter, wherein the first limiter is coupled to the first gain device; and

at least one second rotator, adapted to perform conversion between said second coordinate system and said first coordinate system wherein the at least one second rotator comprises at least one second angle accumulator, and wherein the at least one second rotator is coupled to the first limiter.